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10/500,981	02/25/2005	Harald Rosenfeldt	860011850US(kPAR)20020565	3158

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EXAMINER	
TURNER, SAMUEL A	

ART UNIT	PAPER NUMBER
2877	

NOTIFICATION DATE	DELIVERY MODE
09/19/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

IPOPS.LEGAL@agilent.com

Office Action Summary	Application No.	Applicant(s)	
	10/500,981	ROSENFELDT, HARALD	
	Examiner	Art Unit	
	Samuel A. Turner	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 March 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 July 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/11/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement(s) submitted on 11 March 2005 has been considered by the Examiner.

Abstract

The abstract of the disclosure is objected to because the form and legal phraseology often used in patent claims must be avoided. Correction is required. See MPEP § 608.01(b).

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the polarizer of claim 23 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Replacement Drawing Sheets

Drawing changes must be made by presenting replacement sheets which incorporate the desired changes and which comply with 37 CFR 1.84. An explanation of the changes made must be presented either in the drawing amendments section, or remarks, section of the amendment paper. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). A replacement sheet must include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of the amended drawing(s) must not be labeled as "amended." If the changes to the drawing figure(s) are not accepted by the examiner, applicant will be notified of any required corrective action in the next Office action. No further drawing submission will be required, unless applicant is notified.

Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application. If this information is provided, it must be placed on the front of each sheet and within the top margin.

Annotated Drawing Sheets

A marked-up copy of any amended drawing figure, including annotations indicating the changes made, may be submitted or required by the examiner. The annotated drawing sheet(s) must be clearly labeled as "Annotated Sheet" and must be presented in the amendment or remarks section that explains the change(s) to the drawings.

Timing of Corrections

Applicant is required to submit acceptable corrected drawings within the time period set in the Office action. See 37 CFR 1.85(a). Failure to take corrective action within the set period will result in ABANDONMENT of the application.

If corrected drawings are required in a Notice of Allowability (PTOL-37), the new drawings MUST be filed within the THREE MONTH shortened statutory period set for reply in the "Notice of Allowability." Extensions of time may NOT be obtained under the provisions of 37 CFR 1.136 for filing the corrected drawings after the mailing of a Notice of Allowability.

Claim Objections

Claims 1-15, and 19-24 are objected to under 37 CFR 1.75(c).

In claim 1 the phrase "as the first light beam" should be -from the first light beam-. Claim 2-14 are dependent from claim 1 and therefor is also included in the objection.

In claims 5 and 8 there is no antecedent basis for "the first and second parts of the first light beam". Antecedent basis is found in claim 4. Claim 9 is dependent from claim 8 and therefor is also included in the objection.

In claim 6 there is no antecedent basis for "each recombined part of the first light beam". Antecedent basis is found in claim 4.

In claim 15 "the Jones matrix" should be -a Jones matrix-.

In claims 19-23 there is no antecedent basis for "the DUT polarization delay unit". Antecedent basis is found in claim 18. Claim 24 is dependent from claim 23 and therefor is also included in the objection.

In claim 24 there is no antecedent basis for "the second polarization beam splitter". Antecedent basis is found in claim 20.

Claim Rejections - 35 USC § 112, second paragraph

The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-24 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-24 are generally narrative and indefinite, failing to conform with current U.S. practice. They are replete with antecedent basis (see the objections above), grammatical and idiomatic errors.

Claims 1 and 8 are indefinite because the language of the phrase "when tuning the frequency of the incoming light beam over a given frequency range" only suggests the step of tuning. Therefor the claim does not clearly set forth the metes

and bounds of the patent protection desired. Claim scope is not limited by claim language that suggests or makes optional but does not require steps to be performed. See MPEP § 2106.II(C) and 2111.04. Claims 2-7, and 9-13 are dependent from claim 1 and therefor are also included in the rejection.

In claims 1, 2, 7, and 8 the phrase "the detected powers" conflicts with the step of "detecting the power of the at least one superimposed light beam" because the step includes one detected power while the phrase suggests at least two. Claims 3-6, and 9-13 are dependent from claim 1 and therefor are also included in the rejection.

In claims 3, 7, 10, and 12 the use of the term "preferably" is indefinite because a broad range or limitation followed by linking terms (e.g., preferably, maybe, for instance, especially) and a narrow range or limitation within the broad range or limitation is considered indefinite since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired.

Claim 5 is indefinite because the language of the phrase "whereby the polarizations of at least one of the following being at least approximately orthogonal to each other" only suggests the step of splitting the first or second light beams into approximately orthogonal polarizations. Therefor the claim does not clearly set forth the metes and bounds of the patent protection desired.

In claim 6 the ranges claimed are confusing. With the phrases "each recombined part of at least one of the following" and "at least approximately 50% of

the power" each beam each recombined part can have 100% of the power of the incoming light beam. The total power would then be 400% of the incoming light beam.

In claim 10 the phrase "such as" is indefinite because a broad range or limitation followed by linking terms (e.g., preferably, maybe, for instance, especially) and a narrow range or limitation within the broad range or limitation is considered indefinite since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired.

Claim 14 indefinite because the language of the phrase "can be" only suggests that the DUT is coupled into the first path. Therefor the claim does not clearly set forth the metes and bounds of the patent protection desired. Claim scope is not limited by claim language that suggests a structural limitation but does not limit a claim to a particular structure. See MPEP § 2106.II(C) and 2111.04. Claims 15-24 are dependent from claim 14 and therefor are also included in the rejection.

Claims 14 and 23 are indefinite because the language of the phrase "when tuning the frequency of the incoming light beam over a given frequency range" only suggests the structure for tuning the source. Therefor the claim does not clearly set forth the metes and bounds of the patent protection desired. Claims 15-24 are dependent from claim 14 and therefor are also included in the rejection.

In claims 14 and 15 the phrase "the detected powers" is confusing because it refers to more than one detected power, however the detector unit only detects the

power of the resulting superimposed light beam. Claims 16-24 are dependent from claim 14 and therefor are also included in the rejection.

Claim 16 conflicts with itself. First the polarization setting tool is in the first path, after the first beam splitter. Then the polarization setting tool is positioned in the incoming beam path which is before the first beam splitter.

In claim 17 there is no antecedent basis for "the respective beam". No apparatus claim provides support for this term.

In claim 20 the "second polarization beam splitter" is confusing because there is no reference to a first polarization beam splitter. This appears to indicate that there is a missing element in either claim 14 or 20.

In claim 23 there is no defined relationship between the power detector and the detector unit of claim 14.

Claim 24 is rejected as including improper alternative language.

Alternative expressions are permitted if they present no uncertainty or ambiguity with respect to the question of scope or clarity of the claims. In the instance where the list of potential alternatives can vary and ambiguity arises, then it is proper to make a rejection under 35 U.S.C. 112, second paragraph, and explain why there is confusion, MPEP 2173.05(h).

The number of "devices" combinations, there location, and there structure cannot be determined because of the overlapping effects of the phrase "at least one of' on the claimed limitations. The phrase appears in claim 23 which effects the number of combinations in claim 24.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 4-8, 10-18, and 20-22 are rejected under 35 U.S.C. § 102(e) as being clearly anticipated by Rosenfeldt et al(6,606,158).

The applied reference to Rosenfeldt et al has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. § 102(e). This rejection under 35 U.S.C. § 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

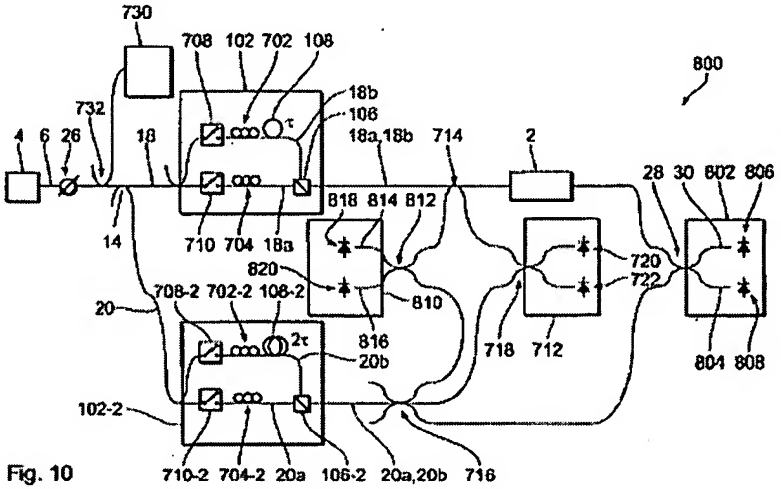


Fig. 10

With regard to claim 1, Rosenfeldt et al teach a method of determination of a property of an optical device under test(column 12, line 43- column 15, line 28; see figure 10), comprising:

splitting an incoming light beam into a first light beam and a second light beam(at coupler 14),

coupling the first light beam into the optical device under test(at DUT 2),

letting the second light beam travel a different path as the first light beam(path 20),

splitting the second light beam into a first part and a second part(at PDU 102-2),

delaying the second part of the second light beam relative to the first part of the second light beam(at 108-2),

recombining the first and the second part of the second light beam(at 106-2),

superimposing the first light beam and the recombined parts of the second light beam to produce interferences between the first light beam and the recombined parts of the second light beam in at least one resulting superimposed light beam(at 28 and 718),

detecting the power of the at least one superimposed light beam as a function of frequency and polarization when tuning the frequency of the incoming light beam over a given frequency range(at 712, 802, and 810), and

deriving the optical property of the optical device under test from the frequency dependence of the detected powers(column 6, lines 60-63).

As to claim 2/1, further comprising deriving elements of the Jones matrix for the optical device under test from the frequency dependence of the detected powers(column 13, lines 3-45).

As to claim 4/1, further comprising:

splitting the first light beam into a first part and a second part(at PDU 102),

delaying the second part of the first light beam relative to the first part of the first light beam(at 108),

recombining the first and the second part of the first light beam(at 106), and

coupling the recombined parts of the first light beam with different polarizations into the optical device under test(at DUT 2).

As to claim 5/1, whereby the polarizations of at least one of the following being at least approximately orthogonal to each other: the first and second parts of the first light beam(column 10, lines 5-8), the first and second parts of the second light beam(column 10, lines 5-8).

As to claim 6/1, whereby each recombined part of at least one of the following has at least approximately 50% of the power of the incoming light beam: each recombined part of the first light beam(column 11, lines 1-19), each recombined part of the second light beam(column 11, lines 1-19).

As to claim 7/1, further comprising:

filtering a peak in the spectrum of detected powers(column 13, lines 3-10), preferably by a band pass filter,

allocating the peak in the spectrum to the respective part(column 13, lines 3-45), and

deriving optical properties of the optical device under test from the frequency and polarization dependence of the detected powers(column 6, lines 60-63).

As to claim 8/1, further comprising: producing interference between the recombined parts of at least one of the following in a resulting superimposed light beam: the first and second parts of the first light beam(at 712, 802, and 810), the first and second parts of the second light beam(at 712, 802, and 810),

continuously detecting the power of the resulting superimposed light beam as a function of frequency when tuning the frequency of the incoming light beam over a given frequency range(column 12, line 66- column 15, line 3),

detecting a nonlinearity in a tuning gradient frequency when tuning the frequency of the incoming light beam over the given frequency range(column 4, lines 33-43; at WRU 730), and

when detecting a nonlinearity, using said detected nonlinearity information to compensate effects on the detected powers(column 4, lines 33-43).

As to claim 10/1, further comprising at least one of the following:

deriving the polarization mode dispersion of the device under test from the information obtained through the measurement, preferably represented as Jones matrix elements of the device under test(column 6, lines 60-63),

deriving the chromatic dispersion of the device under test from the Jones matrix elements of the device under test(column 6, lines 60-63),

deriving the principal states of polarization of the device under test from the Jones matrix elements of the device under test(column 6, lines 60-63),

deriving the polarization dependent loss of the device under test from the Jones matrix elements of the device under test(column 6, lines 60-63),

deriving the fast and slow group delays, associated with the fast and slow principal states of polarization of the device under test from the Jones matrix elements of the device under test(column 6, lines 60-63),

deriving the insertion loss of the device under test from the Jones matrix elements of the device under test(column 6, lines 60-63),

deriving the transmissivity of reflectivity of the device under test from the Jones matrix elements of the device under test(column 6, lines 60-63),

deriving higher-order polarization mode dispersion parameters, such as the rate of change of the differential group delay with frequency, from the Jones matrix elements of the device under test(column 6, lines 60-63).

As to claim 11/1, further comprising splitting at least one of the following into a first and a second part in a polarization dependent manner: the first light beam(at PDU 102), the second light beam(at PDU 102-2).

As to claim 12/1, further comprising:

separating the spectral components of each of the recombined parts by using two band pass filters, preferably FIR filters, to produce a signal to be processed by a Jones matrix eigenanalysis(column 13, lines 3-10), and

shifting either the faster or the slower oscillating signal of the spectral components in frequency so that it is aligned to the other oscillating signal, preferably by using the differential group delay $DGD_{PDU}=\tau_{LO,H}-\tau_{LO,V}$ of the PDU, $\tau_{LO,H}$ being the DGD of one spectral component, $\tau_{LO,V}$ being the DGD of the other spectral component, preferably performing the shift in frequency by subtracting a linear phase term from the analytical signal by multiplying with $\exp(\pm(\tau_{LO,H}-\tau_{LO,V})\omega)$, ω being the frequency of the incoming light beam(column 13, lines 3-63).

As to claim 13/1, further comprising:

choosing a DGD value when delaying the second part of the second light beam relative to the first part of the second light beam relative to a DGD value or vice versa when delaying the second part of the first light beam relative to the first part of the first light beam in a way ensuring that respective spectral components of each part do not intersect(column 13, line 64- column 14, line 30).

With regard to claim 14, Rosenfeldt et al teach an apparatus for determination of optical properties of an optical device under test(Fig. 11), comprising:

a first beam splitter in a path of an incoming light beam for splitting the incoming light beam into a first light beam traveling a first path and a second light beam traveling a second path(Fig. 11, 14), wherein the optical device under test can be coupled in said first path for coupling in the first light beam(Fig. 11, 2),

a LO polarization delay unit for(Fig. 11, 102-2): splitting the second light beam into a first part and a second part, delaying the second part of the second light beam relative to the first part of the second light beam, recombining the first and the second part of the second light beam,

a second beam splitter in said first and in said second path for superimposing the first light beam and the recombined parts of the second light beam to produce interferences between the first light beam and the recombined parts of the second light beam in at least one resulting superimposed light beam traveling a resulting path(Fig. 11; 28, 718, 812),

a detector unit in said resulting path for detecting the power of the resulting superimposed light beam traveling the resulting path as a function of frequency and polarization when tuning the frequency of the incoming light beam over a given frequency range(Fig. 11; 712, 802, 812), and

an evaluation unit for deriving optical properties of the optical device under test from the frequency dependency of the detected powers(column 6, lines 47-63).

As to claim 15/14 comprising an evaluation unit for deriving elements of the Jones matrix of the optical device under test from the frequency dependence of the detected powers(column 6, lines 47-63).

As to claim 16/14, further comprising a polarization setting tool positioned in said first path for adjusting the polarization of the first light beam to a defined polarization, wherein the polarization setting tool is positioned in the path of the incoming light beam before or after the first beam splitter(Fig. 11; 702, 704).

As to claim 17/16, wherein the polarization setting tool is adjusting the polarization of the respective beam in a linear manner(Fig. 11; 28, 702, 704).

As to claim 18/14, further comprising: a DUT polarization delay unit for: splitting the first light beam into a first part and a second part, delaying the second part relative to the first part, recombining the first and the second part, providing the recombined parts with different polarizations for coupling into the optical device under test(Fig. 11, 102).

As to claim 20/14, wherein at least one of the following comprises a second polarization beam splitter for recombining the first part and the second part: the LO polarization delay unit(Fig. 11, 106-2), the DUT polarization delay unit(Fig. 11, 106).

As to claim 21/14, wherein at least one of the following comprises a first optical path for the first part and a second optical path for the second part, the second path having a longer optical length than the first path, for delaying the second part relative to the first part: the LO polarization delay unit(Fig. 11, 108-2), the DUT polarization delay unit(Fig. 11, 108).

As to claim 22/14, wherein at least one of the following comprises a polarizing device for providing each of the recombined parts with different polarizations: the LO polarization delay unit(Fig. 11, 702-2), the DUT polarization delay unit(Fig. 11, 702).

Claims 1, 2, 4-8, 10, 11, 13-18, and 21-22 are rejected under 35 U.S.C. § 102(e) as being clearly anticipated by Froggatt(6,856,400).

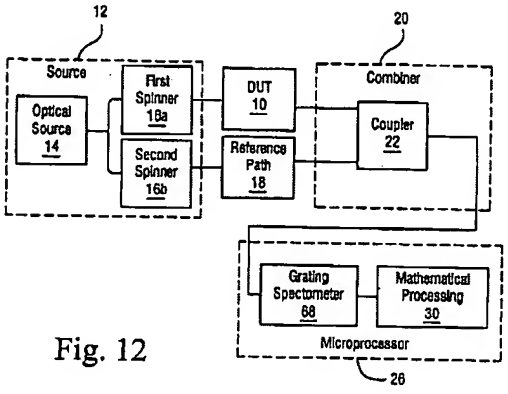


Fig. 12

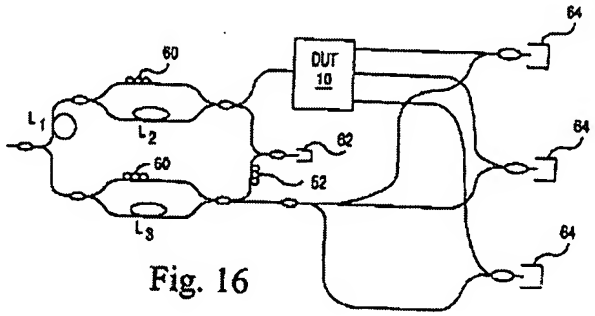


Fig. 16

With regard to claim 1, Froggatt teaches a method of determination of a property of an optical device under test(column 17, line 32- column 19, line 8), comprising:

splitting an incoming light beam into a first light beam and a second light beam(column 17, lines 40-53),

coupling the first light beam into the optical device under test(column 17, lines 61-64),

letting the second light beam travel a different path as the first light beam(column 17, lines 61-64),

splitting the second light beam into a first part and a second part(column 17, lines 54-60),

delaying the second part of the second light beam relative to the first part of the second light beam(column 17, lines 54-60),

recombining the first and the second part of the second light beam(column 17, lines 54-60),

superimposing the first light beam and the recombined parts of the second light beam to produce interferences between the first light beam and the recombined parts of the second light beam in at least one resulting superimposed light beam(column 17, lines 61-64),

detecting the power of the at least one superimposed light beam as a function of frequency and polarization when tuning the frequency of the incoming light beam over a given frequency range(column 18, lines 32-46), and

deriving the optical property of the optical device under test from the frequency dependence of the detected powers(column 18, lines 18-31).

As to claim 2/1, further comprising deriving elements of the Jones matrix for the optical device under test from the frequency dependence of the detected powers(column 18, lines 18-31).

As to claim 4/1, further comprising: splitting the first light beam into a first part and a second part(column 17, lines 54-60), delaying the second part of the first light beam relative to the first part of the first light beam(column 17, lines 54-60), recombining the first and the second part of the first light beam(column 17, lines 54-60), and coupling the recombined parts of the first light beam with different polarizations into the optical device under test(column 17, lines 61-64).

As to claim 5/1, whereby the polarizations of at least one of the following being at least approximately orthogonal to each other: the first and second parts of the first light beam(column 17, lines 54-60), the first and second parts of the second light beam(column 17, lines 54-60).

As to claim 6/1, whereby each recombined part of at least one of the following has at least approximately 50% of the power of the incoming light beam: each recombined part of the first light beam(column 17, lines 54-60), each recombined part of the second light beam(column 17, lines 54-60).

As to claim 7/1, further comprising: filtering a peak in the spectrum of detected powers(column 18, lines 32-54), preferably by a band pass filter, allocating the peak in the spectrum to the respective part(column 18, lines 32-54), and

deriving optical properties of the optical device under test from the frequency and polarization dependence of the detected powers(column 18, lines 18-31).

As to claim 8/1, further comprising: producing interference between the recombined parts of at least one of the following in a resulting superimposed light beam: the first and second parts of the first light beam(column 17, lines 61-64), the first and second parts of the second light beam(column 17, lines 61-64),continuously detecting the power of the resulting superimposed light beam as a function of frequency when tuning the frequency of the incoming light beam over a given frequency range(column 18, lines 32-54), detecting a nonlinearity in a tuning gradient frequency when tuning the frequency of the incoming light beam over the given frequency range(column 17, lines 40-53), and when detecting a nonlinearity, using said detected nonlinearity information to compensate effects on the detected powers(column 7, line 58- column 8, line 5).

As to claim 10/1, further comprising at least one of the following: deriving the polarization mode dispersion of the device under test from the information obtained through the measurement, preferably represented as Jones matrix elements of the device under test(column 14, lines 48-50), deriving the chromatic dispersion of the device under test from the Jones matrix elements of the device under test(column 14, lines 48-50), deriving the principal states of polarization of the device under test from the Jones matrix elements of the device under test(column 14, lines 48-50), deriving the polarization dependent loss of the device under test from the Jones

matrix elements of the device under test(column 14, lines 48-50), deriving the fast and slow group delays, associated with the fast and slow principal states of polarization of the device under test from the Jones matrix elements of the device under test(column 14, lines 48-50), deriving the insertion loss of the device under test from the Jones matrix elements of the device under test, deriving the transmissivity of reflectivity of the device under test from the Jones matrix elements of the device under test, deriving higher-order polarization mode dispersion parameters(column 14, lines 48-50), such as the rate of change of the differential group delay with frequency, from the Jones matrix elements of the device under test.

As to claim 11/1, further comprising splitting at least one of the following into a first and a second part in a polarization dependent manner: the first light beam(column 17, lines 54-60), the second light beam(column 17, lines 54-60).

As to claim 13/1, further comprising: choosing a DGD value when delaying the second part of the second light beam relative to the first part of the second light beam relative to a DGD value or vice versa when delaying the second part of the first light beam relative to the first part of the first light beam in a way ensuring that respective spectral components of each part do not intersect(column 18, lines 32-38).

With regard to claim 14, Froggatt teaches an apparatus for determination of optical properties of an optical device under test(Fig's 12 and 13), comprising:

a first beam splitter in a path of an incoming light beam for splitting the incoming light beam into a first light beam traveling a first path and a second light beam traveling a second path(Fig. 12, between 14 and 16a,16b),

wherein the optical device under test can be coupled in said first path for coupling in the first light beam(Fig. 12, 10),

a LO polarization delay unit for: splitting the second light beam into a first part and a second part, delaying the second part of the second light beam relative to the first part of the second light beam, recombining the first and the second part of the second light beam(Fig. 12, 16b),

a second beam splitter in said first and in said second path for superimposing the first light beam and the recombined parts of the second light beam to produce interferences between the first light beam and the recombined parts of the second light beam in at least one resulting superimposed light beam traveling a resulting path(Fig. 12, 22),

a detector unit in said resulting path for detecting the power of the resulting superimposed light beam traveling the resulting path as a function of frequency and polarization when tuning the frequency of the incoming light beam over a given frequency range(Fig. 12, 68), and

an evaluation unit for deriving optical properties of the optical device under test from the frequency dependency of the detected powers(Fig. 12, 30).

As to claim 15/14 comprising an evaluation unit for deriving elements of the Jones matrix of the optical device under test from the frequency dependence of the detected powers(Fig. 12, 30).

As to claim 16/14, further comprising a polarization setting tool positioned in said first path for adjusting the polarization of the first light beam to a defined polarization(Fig. 12, 16a), wherein the polarization setting tool is positioned in the path of the incoming light beam before or after the first beam splitter(Fig. 12, 16a).

As to claim 17/16, wherein the polarization setting tool is adjusting the polarization of the respective beam in a linear manner(Fig. 12, 16a).

As to claim 18/14, further comprising: a DUT polarization delay unit for: splitting the first light beam into a first part and a second part, delaying the second part relative to the first part, recombining the first and the second part, providing the recombined parts with different polarizations for coupling into the optical device under test(Fig. 12, 16a).

As to claim 21/14, wherein at least one of the following comprises a first optical path for the first part and a second optical path for the second part, the second path having a longer optical length than the first path, for delaying the second part relative to the first part: the LO polarization delay unit(Fig. 12, 16b), the DUT polarization delay unit(Fig. 12, 16a).

As to claim 22/14, wherein at least one of the following comprises a polarizing device for providing each of the recombined parts with different polarizations: the

LO polarization delay unit(Fig. 12, 16b), the DUT polarization delay unit(Fig. 12, 16a).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3, 9, 19, 23, and 24 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Froggatt(6,856,400).

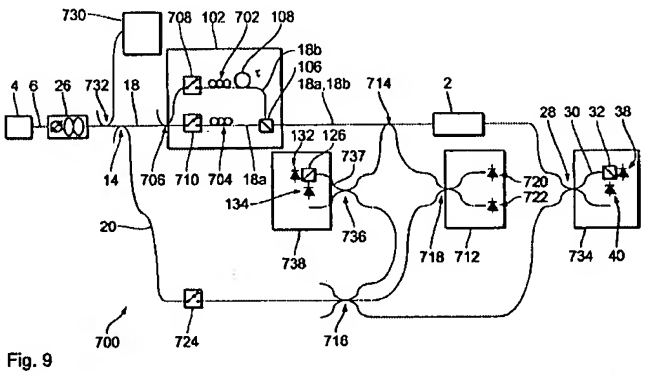


Fig. 9

As to claim 3/1, further comprising: changing the polarization of the first light beam with respect to a original polarization of the first light beam into a changed polarization(at 702-2 and 704-2), preferably said changed polarization being orthogonal to said original polarization.

Rosenfeldt et al **fail to teach** performing claim 1 a second time with said changed polarization.

As to claim 9/8, Rosenfeldt et al **fail to teach** producing interference by polarizing the recombined parts.

As to claim 19/14, Rosenfeldt et al **fail to teach** wherein at least one of the following comprises a first polarization beam splitter for splitting the first light beam into a first part and a second part: the LO the polarization delay unit, the DUT polarization delay unit.

As to claim 23/14, the apparatus further comprising a power detector in said resulting path for detecting the power of the resulting superimposed light beam as a function of frequency when tuning the frequency of the incoming light beam over a given frequency range(**Fig. 11, 730**),

whereby an output of the power detector is connected with the evaluation unit for detecting any nonlinearity in a tuning gradient frequency when tuning the frequency of the incoming light beam over the given frequency range, and in case evaluation unit is detecting any nonlinearity, the evaluation unit is using said detected nonlinearity information to compensate effects on the detected powers caused by said nonlinearity(**column 4, lines 33-43**).

Rosenfeldt et al **fail to teach** wherein at least one of the following comprises a device for providing the recombined parts with different polarizations to a polarizer to produce interference between the parts in a resulting superimposed light beam

traveling a resulting path: the LO polarization delay unit, the DUT polarization delay unit.

As to claim 24/23, wherein the device is at least one of the following:

an output port of the second polarization beam splitter not to be connected with the optical device under test(Fig. 11, 714), a polarization maintaining coupler to be connected with the output port of the second polarization beam splitter to be connected with the optical device under test(Fig. 11, 714), at least one beam splitter to be connected with the output port of the second polarization beam splitter to be connected with the optical device under test(Fig. 11, 106).

CLAIMS 3, 9, 23, and 24:

Rosenfeldt et al teach placing a single PDU 102 in the path of the first beam. By using a single PDU polarizing beam-splitters 32 and 126 are needed to mix the polarizations of the superimposed beams(Fig. 9). The use of the receiver 712 provides for a single scan system(column 12, line 66- colimn 13, line 63).

With regard to claims 3, 9, and 23; it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Rosenfeldt et al by eliminating the PDU 102 from the first path and eliminating PCU 712. This would leave a single PDU 102-2 in the second path. This would then require the detector arrangement 734 with a polarizing beam-splitter to mix the polarizations of the superimposed beams or inserting polarizers at detectors 806 and 808.

The motivation for this modification would have been to reduce the number of parts because both a PDU 102 and a PCU 712 are eliminated with the addition of a single polarizing beam-splitter or two polarizers. It has been held that omission of an element and its function, the PDU 102 and the PCU 712, in a combination where the remaining elements perform the same function as before involves only routine skill in the art. In re Karlson, 136 USPQ 184. Thus the resultant apparatus is similar in function to figure 1 and requires 2 scans. Using a combination of known elements is obvious when it does no more that yield predictable results, See United States v. Adams, 383 U.S. 39. Claim 24 is dependent from claim 23 and therefor is also included in the rejection.

CLAIM 19:

Rosenfeldt et al teach a PDU with both an input polarizing beam-splitter 104, and an output polarizing beam-splitter 106, see figure 6. This arrangement is different from the PDU of figures 9 and 10 which use a polarization maintaining fiber coupler 706 and polarization setting tools 702 and 704. Because these PDU's perform the same function they are optical equivalents.

With regard to claim 19, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify figure 10 of Rosenfeldt et al by substituting the PDU of figure 6 for the PDU in figure 10.

The motivation for this modification an availability of parts for the different PDU's and using a combination of known elements is obvious when it does no more that yield predictable results, See United States v. Adams, 383 U.S. 39.

Relevant Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yoshida(5619325), see figure 3.

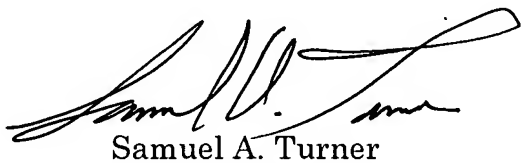
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel A. Turner whose phone number is 571-272-2432.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr., can be reached on 571-272-2800 ext. 77.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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Art Unit 2877